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ABSTRACT

The introductory section of the paper expresses its purpose: to devise a classification scheme for career education resource material, which will be used to develop the USOE Office of Career Education Resource Library and will be disseminated to interested State departments of education and local school districts to assist them in classifying their own career education resource materials. The second section of the paper describes the classification of career education resource material, revised after critiquing by 50 randomly selected career education practitioners. The third section describes the classification scheme, defines the nine cataloging terms used, and lists the 40 key descriptors utilized in the filing system. The classification headings are discussed to eliminate confusion of terms. The fourth section describes the use of the key descriptors and card catalog for the purpose of searching and retrieving needed material, and the storage problem is discussed. Section five explains how the index card is designed for conversion to computer card, and the main advantages of a computer system of retrieval are discussed. Brief descriptions of discipline and content areas, of special groups, and of types of materials are appended, as well as a sample index card. (Author/AJ)

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A CLASSIFICATION SCHEME FOR CAREER EDUCATION RESOURCE MATERIALS

JUL 25 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

OFFICE OF EDUCATION

Office of Career Education

June 1975

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A CLASSIFICATION SCHEME FOR CAREER EDUCATION RESOURCE MATERIALS

Prepared for the

OFFICE OF CAREER EDUCATION

UNITED STATES OFFICE OF EDUCATION

JUNE 1975

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Prepared by

Ronald G. Koontz

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I

INTRODUCTION

In January, 1971 the term Career Education was brought to national focus by USOE Commissioner Sidney P. Marland, Jr. as he spoke before the National Association of Secondary School Principals in Houston, Texas. Commissioner Marland avoided the attachment of an Office of Education definition to the concept in favor of permitting the scholars and practitioners of the nation to develop and define career education. In reality this development of the career education concept had already begun a year before the famous Houston speech with the funding of fifty kindergarten through grade 14 exemplary projects under the authority of the Vocational Education Amendments of 1968--Part D.

As the career education concept has developed over the past five years, educators in local school districts. state departments of education, and universities have produced increasing quantities of career education resource materials. These materials cut across all subject areas and disciplines. Literally thousands of items of resource materials are being collected in state departments of education and in the USOE Office of Career Education. In order to classify and store these materials for the purpose of quick retrieval, it is necessary that a special classification scheme be devised for career education resource materials.

Purpose

The purpose of this paper is to devise a classification scheme for career education resource material. The classification scheme should enable an individual:

1. To search for career education resource material through a card catalog arranged by key descriptors.
2. To determine the content of resource materials through the efficient cataloging of information.
3. To quickly retrieve career education resource materials for further examination.

This classification scheme will be used to develop the USOE Office of Career Education Resource Library and will be disseminated to interested state departments of education and local school districts to assist them in classifying their own career education resource materials. The Office of Career Education Resource Library will become a center for career education resource materials in the United States and be made available to all interested citizens.

Limitation

A classification scheme should be all inclusive (a place for everything) and mutually exclusive (only one place for any particular thing). This cannot be promised. The concept of Career Education is still under development and new insights brought forth by future career education research may lead to information not included in this classification scheme.

Procedures

The second section of this paper describes the classification of career education resource material. Information germane to career education and conventional information was used to develop the first

classification scheme. This first scheme was sent to the 50 state coordinators of career education and 50 randomly selected career education practitioners for their critique. As a result of these critiques and further in-depth study by the author, a revised classification scheme was developed.

The third section illustrates the cataloging of the classification scheme to an index card. The classification headings are discussed with definitions provided to eliminate confusion of terms. The filing of this cataloged information by the use of 40 key descriptors is illustrated.

The fourth section describes the use of the key descriptors and card catalog for the purpose of searching and retrieving needed career education resource material. Also the problem of storage of the resource material is discussed.

Since many agencies are equipped with computers, section five explains how the index card is designed for efficient and economical conversion of information from card to computer card and tape. The main advantages of a computer system over a manual system of information retrieval is presented.

II

CLASSIFICATION OF CAREER EDUCATION RESOURCE MATERIALS

There are two types of information that are needed for classifying career education resource materials. The first type is that information which is specifically germane to the concept of career education. The second type is conventional information which must be known about materials germane to any area for proper classification.

Information Germane to Career Education

Shortly after Marland's Houston speech, the Office of Education initiated the funding of four career education models. These four models were classified: School Based, Employer Based, Home-Community, and Rural-Residential. Also in 1971 the Office of Education began work on a classification system to combine the over 20,000 jobs listed in the Dictionary of Occupational Titles into fifteen career clusters as a method for analyzing and studying the world of work. Funds for curriculum development in serveral of the clusters were awarded by the Office of Education.

As the concept of Career Education developed, the Office of Education suggested that career education could be classified into five key components. These five components were: The infusing of career information into all subject matter, The provision of the opportunity to acquire vocational job skills, The processes of career development and career decision making, The interaction between school and community,

and Home and Family. More recently the process of career development has been broken down into growth stages called: Career Awareness, Career Exploration, Career Motivation, Career Decision Making, Career Preparation, and Career Entry.

Other information related to the career education concept is educational level and discipline and content areas as career education exists at all levels and permeates all discipline and content areas. Career education also addresses individuals in special groups who have been neglected by society or need special attention to achieve their educational potential.

In summary, the career education movement has identified the following areas as germane to the career education concept: Career Education Models, Career Education Clusters, Career Education Components, Career Education Stages, Educational Level, Discipline and Content Area, and Special Groups.

Conventional Information

Conventional information needed for the classification of information germane to any area is retrieval number, title, author, publisher, date, brief abstract of material, and type of material. Standard information as the above is used by most libraries in classifying materials. This conventional information is blended with information germane to career education to develop a total classification scheme.

Adaptation of Information to a Classification Scheme

The career related information and conventional information was adapted to a 5" x 8" index card in a preliminary format as illustrated by Exhibit A. The preliminary index card included twelve items of

1. _____ Retrieval Number

2. _____ Title or Brief Description of Material

3. _____ Date of Material

4. _____ Local Agency and State

5. Educational Level
- ___a. Early Elementary (K-3)
- ___b. Upper Elementary (4-6)
- ___c. Junior/Middle (7-9)
- ___d. Senior (10-12)
- ___e. Post-Secondary
- ___f. Adult

6. Discipline and Content Area
- ___a. Agri./Natural Science
- ___b. Business
- ___c. Distributive Ed.
- ___d. English Lang. Arts
- ___e. Fine Arts
- ___f. Foreign Languages
- ___g. Health Occupations
- ___h. Home Economics
- ___i. Industrial Arts
- ___j. Mathematics
- ___k. Office Occupations
- ___l. Physical Ed. & Recreation
- ___m. Social Sciences
- ___n. Technical Education
- ___o. Trade and Industrial Ed.
- ___p. Gen'l Elem. or Sec. Ed.
- ___q. Career Guid. & Counseling
- ___r. Career Information
- ___s. Community Relations
- ___t. Evaluation
- ___u. Follow-up
- ___v. Management
- ___w. Placement
- ___x. Staff Development
- ___y. Consumer Education
- ___z. Cooperative Education

7. Career Cluster
- ___a. Agri. Bus. & Natural Resources
- ___b. Business and Office
- ___c. Communications and Media
- ___d. Consumer and Homemaking Ed.
- ___e. Construction
- ___f. Environmental Control
- ___g. Fine Arts and Humanities
- ___h. Health
- ___i. Hospitality and Recreation
- ___j. Manufacturing
- ___k. Marine Science
- ___l. Marketing & Distribution
- ___m. Personal Services
- ___n. Public Services
- ___o. Transportation

8. Career Education Model
- ___a. School Based
- ___b. Experience Based
- ___c. Home/Community
- ___d. Rural/Residential

9. Career Education Stage
- ___a. Career Awareness
- ___b. Career Exploration
- ___c. Career Motivation
- ___d. Career Decision Making
- ___e. Career Preparation
- ___f. Career Entry

10. Components
- ___a. Career Information Infused into Subject Matter
- ___b. Acquiring Vocational Job Skills
- ___c. Career Development & Career Decision Processes
- ___d. Interaction of School and Community
- ___e. Home and Family

11. Special Groups
- ___a. Physically Handicapped
- ___b. Mentally Handicapped
- ___c. Gifted and Talented
- ___d. Emotionally Disturbed
- ___e. Culturally Deprived
- ___f. Minorities
- ___g. Low Income
- ___h. Female
- ___i. Reading Problems
- ___j. Adults
- ___k. Senior Citizens
- ___l. Correctional

12. Type of Material
- ___a. Curriculum Guide
- ___b. Teacher's Guide
- ___c. Bibliography or Directory
- ___d. Laboratory-Practice Manual
- ___e. Simulation Situation
- ___f. Evaluation Instrument
- ___g. Administrative Material
- ___h. Student Workbook or Manual
- ___i. Textbook
- ___j. Instructional Unit
- ___k. Program Development Guide
- ___l. Instructional Module
- ___m. Records or Tapes
- ___n. Films or Slides
- ___o. Activity Kits
- ___p. Games or Puzzles

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EXHIBIT A
Preliminary Index Card

information in which to classify career education resource material.

The conventional information of retrieval number, title, author, publisher, date, brief abstract of material, and type of material was adapted to the total classification scheme with the following minor adjustments:

1. The title and brief abstract of material was combined in classification heading 2 to read Title or Brief Description of Material. Thus the brief description is only used if the material has no title or is of a special nature that cannot be classified under classification headings 5 to 11.

2. The author and publisher was combined in classification heading 4--Local Agency and State to include author (person or institution), city, and state of the person or agency that produced the material.

As in most cataloging systems, the retrieval number, title, author, publisher, and date were arranged at the top of the index card. Since classification heading 12--Type of Material is supplemental information, it was placed last on the index card. Section three discusses in greater detail the cataloging of the classification scheme to the index card.

The information related to career education is included on the index card under classification headings 5--Educational level, 6--Discipline and Content Area, 7--Career Cluster, 8--Career Education Model, 9--Career Education Stage, 10--Components, and 11--Special Groups. In adapting this information to the index card, the only change was made under classification heading 8--Career Education Model item b. The term Employer Based Model was changed to Experience Based Model because this is the new terminology preferred for this model by the Office of Career Education.

Revised Classification Scheme

In order to gain nationwide input into this classification scheme for career education resource material, a copy of the preliminary classification scheme (Exhibit A) was mailed to the 50 state Coordinators of Career Education and to 50 practitioners of career education. The 50 practitioners were randomly selected from the over 200 practitioners who had attended 20 mini-conferences on career education conducted by the Office of Career Education during the summer of 1974.

As a result of the critiques received from 56% of the state coordinators and local practitioners of career education and through further in-depth study by the author, a revised classification scheme was developed as illustrated in Exhibit B. The changes made in the classification scheme are as follows:

1. Classification headings Date of Material and Local Agency and State were combined into one classification heading called Source and Date of Material. This new heading includes name, address, and date of person(s) or institution responsible for producing the resource material. This information is useful to the searcher who would like to contact the person(s) or institution responsible for producing the resource material.

2. Under the heading Educational Level, another level called Preschool was added to make the classification more inclusive.

3. The following item changes were made under the classification heading Discipline and Content Area:

   A. Agriculture/Natural Science was made two separate items.

   B. Health and Safety in Daily Living, Physical Education, and Recreation replaces Physical Education and Recreation.

   C. Cooperative Education was changed to Cooperative Work Experience.

   D. Fine Arts was deleted and replaced by two items--Art and Music.

EXHIBIT B
Revised Index Card

A. _____
Retrieval Number

B. _____
_____
_____
Title or Brief Description of Material

C. _____
_____
_____
Source & Date of Material

D. Educational Level
___ 1. Preschool
___ 2. Early Elementary (K-3)
___ 3. Upper Elementary (4-6)
___ 4. Junior/Middle (7-9)
___ 5. Senior (10-12)
___ 6. Post-Secondary
___ 7. Adult
___

E. Discipline and Content Area
___ 1. Agriculture
___ 2. Art
___ 3. Business
___ 4. Distributive Education
___ 5. English Language Arts
___ 6. Foreign Languages
___ 7. Health Occupations
___ 8. Health and Safety in Daily Living, Physical Education and Recreation
___ 9. Home Economics
___ 10. Industrial Arts
___ 11. Mathematics
___ 12. Music
___ 13. Natural Science
___ 14. Office Occupations
___ 15. Safety and Drivers Ed.
___ 16. Social Sciences
___ 17. Technical Education
___ 18. Trade & Industrial Occup.
___ 19. Cocurricular Activities
___ 20. Differentialized Curriculum for the Handicapped
___ 21. Gen'l Elem. & Sec. Education
___ 22. Career Adaptability Skills
___ 23. Career Guid. & Counseling
___ 24. Career Information
___ 25. Community Relations
___ 26. Cooperative Work Exp.
___ 27. Evaluation
___ 28. Follow-up
___ 29. Management
___ 30. Placement
___ 31. Staff Development
___ 32. Other _____

F. Career Cluster
___ 1. Agri. Bus. & Natural Res.
___ 2. Business and Office
___ 3. Communications and Media
___ 4. Consumer and Homemaking Ed.
___ 5. Construction
___ 6. Environmental Control
___ 7. Fine Arts and Humanities
___ 8. Health
___ 9. Hospitality and Recreation
___ 10. Manufacturing
___ 11. Marine Science
___ 12. Marketing and Distribution
___ 13. Personal Services
___ 14. Public Services
___ 15. Transportation
___

G. Career Education Stage
___ 1. Career Awareness
___ 2. Self Awareness
___ 3. Career Exploration
___ 4. Career Decision Making
___ 5. Career Preparation
___ 6. Career Entry
___ 7. Career Advancement
___

H. Special Groups
___ 1. Culturally Different
___ 2. Ethnic
___ 3. Female
___ 4. Gifted and Talented
___ 5. Incarcerated
___ 6. Mentally Handicapped
___ 7. Physically Handicapped
___ 8. Problem Reader
___ 9. Senior Citizen
___ 10. Other _____
___

I. Type of Material
___ 1. Administrative Material
___ 2. Bibliography or Directory
___ 3. Curriculum Guide
___ 4. Evaluation Instrument
___ 5. Instructional Unit
___ 6. Instructional Module
___ 7. Laboratory-Practice Manual
___ 8. Simulation Situation
___ 9. Student Workbook or Manual
___ 10. Teacher's Guide
___ 11. Textbook
___ 12. Audio Tapes
___ 13. Cassettes
___ 14. Films ___ 8 mm ___ 16 mm
___ 15. Filmstrips
___ 16. Records, Discs
___ 17. Slides
___ 18. Transparencies
___ 19. Video Tapes
___ 20. Activity Kits
___ 21. Games
___ 22. Puzzles
___ 23. Tools and Related Items
___ 24. Other _____
___

E. Items Safety and Drivers Education, Cocurricular Activities, Differentialized Curriculum for the Handicapped, and Career Adaptability Skills were added.

F. Consumer Education was considered as part of Home Economics and deleted as a separate item.

4. The classification headings Career Education Model and Components were deleted for the following reasons:

   A. The headings were too general in nature for classification purposes.

   B. Items under the two headings are directly or indirectly referred to under other classification headings.

   C. The two headings could easily change or be altered in the further development of the career education concept.

5. The classification heading Career Education Stage was altered to add the items Self Awareness and Career Advancement and to delete the item Career Motivation.

6. The following item changes were made to the classification heading Special Group:

   A. Culturally Deprived was changed to Culturally Different.

   B. Minorities was changed to Ethnic.

   C. Reading problems was changed to Problem Readers.

   D. Correctional was changed to Incarcerated.

   E. Emotionally Disturbed, Low Income, and Adults were deleted.

   F. The groups were placed in alphabetical order.

7. Under the classification heading Type of Material the following changes were made:

   A. The items were alphabetized by three areas--printed materials, audiovisual materials, and manipulative materials.

   B. Program Development Guide was deleted.

   C. Records or Tapes was separated into items--Audio Tapes, Video Tapes, and Records, Discs.

D. Films or Slides was separated into items--Films ___ 8 mm ___16mm, Filmstrips, and Slides.

E. Games or Puzzles were placed as two separate items.

F. Items Cassettes, Transparencies, and Tools and Related Items were added.

8. The item Other was added to classification headings E--Discipline and Content Area, H--Special Groups, and I--Type of Material to allow for possible future expansion in these classification headings.

9. Finally, it is noted that the revised classification scheme changed the classification headings from numbers to letters and the items from letters to numbers. This change was made for computer purposes which is discussed in section five.

III

USE OF THE CLASSIFICATION SCHEME FOR CATALOGING AND FILING INFORMATION ON CAREER EDUCATION RESOURCE MATERIALS

This section describes how the classification scheme as shown in Exhibit B is used for the cataloging of career education resource material. After the resource material is cataloged, the information is filed according to 40 key descriptors. A listing of these 40 descriptors is given along with directions for filing materials that use more than one descriptor.

Cataloging

As illustrated in Exhibit B, the classification scheme provides nine separate classification headings for career education resource materials. The Retrieval Number, Title or Brief Description of Material, and Source and Date of Material must be typed on the index card while the remainder of the classification scheme is arranged in a checklist order for quick classification of resource material. Thus the procedure for cataloging a piece of career education resource material by use of the classification scheme is to type in the appropriate information for headings A, B, and C and check the appropriate items under headings D through I.

It is possible that a piece of resource material may be classified twice under one heading. For example a mathematics-English curriculum guide requires heading E--Discipline and Content Area to have two items checked--5 (English Language Arts) and 11 (Mathematics). When a

classification heading does have more than one item checked it does affect the filing of the information which is discussed under the subheading Filing.

To eliminate any confusion over cataloging information by use of the classification scheme, a written description of each classification heading is presented as follows:

A. Retrieval Number. Each card is assigned a retrieval number with the first four digets being standard. The CE stands for career education and the 75 denotes the year the material was classified. Thus next year this number changes to CE76. The first item of material to be classified is assigned the number CE7500001. The next item of material classified is numbered CE7500002 and so forth. The materials are placed in folders with the retrieval number clearly marked on the folders and the materials. The folders are always filed in numerical order by retrieval number for easy retrieval.

B. Title or Brief Description of Material. The title of the material is written in this space. If there is no material title, a short description of the material is used to help the searcher determine the material's purpose. A brief description may also be given if the material is of a special nature that cannot be classified by any other classification heading.

C. Source and Date of Material. The name and address of the person(s) or agency responsible for producing the resource material and the date produced are recorded in this heading.

D. Education Level. The educational levels are separated into seven levels. If the material would be applicable to more than one level such as K-6, than both Early and Upper Elementary levels are checked.

E. Discipline and Content Area. The resource material is more specifically classified as to related discipline or content area. Since the searcher may find some confusion over the various discipline and content areas, a description of each item can be found in Appendix A.

F. Career Cluster. The career cluster scheme as proposed by the Office of Education groups the over 20,000 jobs listed in the Dictionary of Occupational Titles into fifteen career clusters. The cluster concept serves as a method to efficiently study the world of employment. For a more detailed examination of each cluster the reader should refer to ERIC documents No. ED-069-922 and No. ED-067-474.

G. Career Education Stage. The career development process is an important part of the career education concept and this development of vocational maturity is illustrated by the classification of materials according to seven growth stages.

H. Special Groups. Since much material is being developed for special groups, a broad listing of special groups is offered. Appendix B contains a brief description of each special group.

I. Type of Material. The resource material is classified under a detailed listing that provides for classification of various printed materials, audiovisual materials, or manipulative materials. Since the various types of printed materials may be difficult to interpret, a description of each may be found in Appendix C. It is felt that the various audiovisual and manipulative materials are self-explanatory and they are not included in the Appendix.

To ensure that resource materials are correctly cataloged, it is suggested that the index cards might be disseminated by state departments of education to all agencies developing career education resource materials. The source agencies can then properly catalog the materials and send the materials and catalog card to the Office of Career Education Resource Library or other local and state career education resource libraries for storage. This would save valuable time for personnel operating a career education resource library and it would also ensure that the materials are cataloged correctly.

Filing

Once the career education resource material has been cataloged according to the classification scheme the next step is to file this information. This can be accomplished by using just one file system with key descriptors from two main classifications. The two main classifications would be classification headings E--Discipline and Content Area, and H--Special Groups. The other classification headings

are used to supply supplemental information to the searcher, but would not ordinarily be used as key descriptors for the purpose of a manual filing system. An exception may be classification heading C--Source and Date of Material which could be used to file materials by state and local agency. This may be used by the Office of Career Education for visitors who wish to see what materials have been developed within their home state.

Thus the card catalog is arranged by key descriptors taken from classification headings F--Discipline and Content Area and H--Special Groups. The 40 key descriptors are arranged in alphabetical order with all index cards filed behind the respective descriptor alphabetically by title of the material. The following is an illustration of how the card catalog is arranged with key descriptors in alphabetical order:

Agriculture
Art
Business
Career Adaptability Skills
Career Guidance and Counseling
Career Information
Cocurricular Activities
Community Relations
Cooperative Work Experience
Culturally Different
Differentialized Curriculum for the Handicapped
Distributive Education
English Language Arts
Ethnic
Evaluation
Female
Follow-up
Foreign Language
General Elem. & Secondary Ed.
Gifted and Talented
Health Occupations
Health and Safety in Daily Living, Physical Ed. and Recreation
Home Economics
Incarcerated
Industrial Arts
Management
Mathematics
Mentally Handicapped
Music
Natural Science
Office Occupations
Physically Handicapped
Placement
Problem Readers
Safety and Driver Education
Senior Citizen
Social Sciences
Staff Development
Technical Education
Trades and Industrial Occupations

These 40 key descriptors are used for the filing of all cataloged information pertaining to the classification of career education resource material. The other classification headings and items will provide useful supplemental information regarding the material as the searcher looks for specific information.

Should a piece of material be cataloged under more than one key descriptor then a duplicate index card must be made so the information can be filed under all key descriptors. An example would be material on mathematics and English developed especially for the mentally handicapped. This cataloged information would be recorded on three cards and filed under English, mathematics, and mentally handicapped. Thus it is possible that some materials which are broad in scope may require many catalog cards to be filed.

IV

STORAGE AND RETRIEVAL OF CAREER EDUCATION RESOURCE MATERIALS

The storage of resource material of various sizes is presented in this section. The procedure for retrieval of resource materials is shown in five basic steps. The need for adequate audiovisual equipment to examine the resource materials is also discussed.

Storage

After the resource materials are cataloged on index cards, a retrieval number is assigned to the index card, the file folder, and the materials. This recording can be easily accomplished by use of a stamp with an adjustable numbering system. After the materials have been numbered and placed in a folder with the same retrieval number, the folder is filed in numerical order in a file drawer. Thus plans need to be made to have adequate space for storage of resource materials. Should the resource materials be in the form of activity kits or other forms that cannot be stored in a regular file, then a suffix of A is placed after the retrieval number indicating that this material can be found in a separate storage area. This area should be in an adjacent or adjoining room for easy retrieval of resource materials.

Retrieval

The usual steps taken in the retrieval of career education resource material can be illustrated by supposing that a junior high school mathematics teacher wishes to see what career education materials are

available in the area of junior high mathematics. The steps the searcher would take are as follows:

1. The searcher examines the descriptors with attached definitions that are made available to all searchers.

2. The searcher looks under the descriptor mathematics and looks at the index cards that have educational level junior/middle (7-9) checked. The index card gives the searcher supplemental information about the material as title, source and date of material, career cluster, career education stage, special groups, and type of material.

3. After the searcher studies the cataloged information and decides on the materials of interest, the searcher writes down the retrieval number located in the upper left corner of the index card.

4. The searcher gives the retrieval number(s) to the library aide who goes into the file room where all resource materials are filed in numerical order by retrieval numbers. The appropriate folders are pulled and the materials given to the searcher to examine. A record is kept of the pulled retrieval numbers for record and security purposes. This requires the name, address, and social security number of the searcher.

5. After examining the materials, the searcher returns the materials to the library aide. The aide then returns the materials to the numerical storage files.

The above five steps illustrate the procedures that most searchers would use in finding and retrieving needed career education resource materials. There may be alterations to these steps depending on the local situation. An example would be if a library aide cannot be employed and the searcher must retrieve the material.

After the searcher has the resource material, the library should be well equipped with various audiovisual equipment to enable the searcher to thoroughly examine the materials. This requires film projector, film strip projector, cassettes, overhead projector,

phonograph, slide projector, screen, and video tape machine. The equipment available may vary from place to place considering the large expense for the above mentioned equipment. However, every effort should be made to supply a career education resource library with adequate audiovisual equipment.

V

COMPUTERIZED METHOD OF INFORMATION RETRIEVAL

Since many federal agencies, state departments of education, universities, and local agencies have use of computers, the classification scheme is designed for easy conversion of cataloged information from index card to computer card and tape. This section explains the process for this conversion and also discusses some of the advantages that a computer offers in the storing and retrieving of information.

Conversion

The most common process of converting information to computer storage is by key-punching the information on computer cards. The computer cards are then run through the computer to convert the information to computer tape.

The classification scheme is arranged on the index card with the nine classification headings coded by a letter and with the items under each heading coded by numbers. It is the coded letters and numbers that are key-punched on the computer card. Most of the information on the index card is coded by numbers rather than letters which is a saving of money in the conversion process. The saving results from the reduction of time that it takes the key-punch operator to convert the information from index card to computer card. A key-punch operator must make two punches for a letter, but only one punch is needed for a number.

It is not the purpose of this paper to describe the precise processes to convert the manual system of information storage and retrieval to a computerized system. A computer programmer will help any agency to accomplish this. It is only meant to say that the information cataloged on the index card is designed for easy and economical conversion to a computer system.

Advantages

The advantages of a computerized storage and retrieval system over a manual system are many. The following is a brief description of some of the advantages:

1. Time. The searcher is saved much valuable time in searching and receiving information by use of a computer. Instead of going to a card catalog and looking at every card under a key descriptor, the searcher would just select the descriptor or combination of descriptors and the computor would search for the information. After finding the information, the computer would tell the searcher where to find it by retrieval number.

2. Manipulation of Information. In the manual system, a searcher looks under one key descriptor at a time. However, the computer system enables the searcher to manipulate the information and look under a combination of information at the same time. This may include terms that are not even key descriptors. An example would be a searcher who is looking for career education resource materials that relate to junior high mathematics dealing with the marine science cluster. The computer enables the searcher to use the three descriptors of mathematics, junior high, and marine science. The computer searches for materials which have those three descriptors and feeds this information back to the searcher.

3. Periodical Print-Outs. It is very time consuming in a manual system to periodically type-up a listing of new materials received or an index of materials on hand. However, a computer system can print-out such information in a short amount of time.

These advantages do make the computer system the best method of operating a career education resource library. There is no doubt that it is the best, however, the cost of such a conversion must be studied prior to a commitment. Small local agencies could not afford it and may not even need it. Larger agencies may already have the equipment which makes the affordability of conversion a good possibility. Either by a manual or computer system the classification scheme is cataloged so that career education resource materials can be effectively classified and retrieved.

APPENDIX A

DESCRIPTION OF DISCIPLINE AND CONTENT AREAS

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The following definitions of subject fields are based on Handbook VI, Standard Terminology for Curriculum and Instruction in Local and State School Systems, U.S. Department of Health, Education, and Welfare, 1970, O.E.-23052.

Agriculture. Agriculture is comprised of the group of related courses or units of subject matter which are organized for carrying on learning experiences concerned with preparation for or upgrading of occupations requiring knowledge and skills in agricultural subjects.

Art. Art is comprised of the organized body of subject matter or related courses involving primarily visual, tactile, kinesthetic expression.

Business. Business includes the body of related subject matter, or related courses, and planned learning experiences designed to develop in pupils the attitudes, knowledge, skills, and understanding concerned with business principles and practices having applications for personal use and/or activities.

Distributive Education. Distributive education includes various combinations of subject matter and learning experiences related to the performance of activities that direct the flow of goods and services, including their appropriate utilization from the producer to the consumer or user.

English Language Arts. English language arts is comprised of the body of related courses, organized for carrying on learning experiences concerned with developing (1) an understanding of the language system; (2) proficiency and control in the use of the English language; (3) appreciation of a variety of literary forms; (4) understanding and appreciation of various aspects of past and present cultures as expressed in literature and (5) interests which will motivate lifelong learning.

Foreign Languages. The body of subject matter in this area is comprised of a variety of foreign languages, including English as a foreign language.

Health Occupations Education. Education for health occupations comprises the body of related subject matter, or the body of related courses, and planned experiences designed to impart knowledge and develop the understanding and skills required to support the health professions.

Health and Safety in Daily Living, Physical Education and Recreation. The body of related subject matter and activities in health and safety in daily living, physical education, and recreation is organized for carrying on learning experiences concerned with developing (1) knowledge, attitudes, appreciation, and conduct essential to individual and group

health; (2) awareness of, concern for, and knowledge, skills, and judgment necessary for practicing and promoting personal and public safety in the home, at school, on the job, and in traffic; and (3) physical and mental growth and fitness by means of activities designed to improve the muscles, motor skills, and attitudes and habits of conduct of individuals and groups.

Home Economics. Home economics comprises the group of related courses or units of instruction organized for purposes of enabling pupils to acquire knowledge and develop understanding, attitudes, and skills relevant to (1) personal, home, and family life, and (2) occupational preparation using the knowledge and skills of home economics.

Industrial Arts. Industrial arts is the body of related subject matter, or related courses, organized for the development of understanding about the technical, consumer, occupational, recreational, organizational, managerial, social, historical, and cultural aspects of industry and technology.

Mathematics. Mathematics comprises the body of related subject matter, or the body of related courses, organized for carrying on learning experiences concerned with the science of methods used for deducing from other quantities, known or supposed, the quantities sought.

Music. Music is the fine art that utilizes sounds in time in a meaningful and organized manner.

Natural Sciences. The natural sciences include the body of related subject matter, or the body of related courses, with the knowledge of the physical and biological world and of the processes of discovering and validating this knowledge.

Office Occupations. This body of subject matter, or combinations of courses and practical experience, is organized into programs of instruction to provide opportunities for pupils to prepare for and achieve career objectives in selected office occupations.

Social Sciences. The social sciences are comprised of interrelated subject matter organized to impart knowledge, develop skills, and identify goals concerning elements and institutions of human society in the disciplines of history, economics, political science, sociology, anthropology, psychology, geography, and philosophy.

Technical Education. Technical education is concerned with that body of knowledge organized in a planned sequence of classroom and laboratory experiences, usually at the postsecondary level, to prepare pupils for a cluster of job opportunities in a specialized field of technology.

Trade and Industrial Occupations. Trade and industrial occupations is the branch of vocational education which is concerned with preparing persons for initial employment or for upgrading or retraining workers in a wide range of trade and industrial occupations.

General Elementary and General Secondary Education. These terms usually refer to instruction which takes place in a self-contained class. Learning experiences are concerned with the knowledges, skills, appreciations, attitudes, and behavioral characteristics considered to be needed by all pupils in terms of the broad educational outcomes which should be achieved by all pupils to the limits of their capacities during the elementary and secondary school years or grades.

Differentialized Curriculum for Handicapped Pupils. The differentialized curriculum for handicapped pupils reflects an increasing awareness today of the individual needs of children. Many children with various types of handicaps cannot benefit from basic subject matter without special education. Handicapped children present learning difficulties and sensory and motor impairments which require careful study for successful adaptation of instruction. Teachers of exceptional children integrate professional information from psychology, education, and medicine for instructional and therapeutic services. Consequently, special education, as applied to each type of handicapped child, has developed some distinctive techniques and materials which distinguish it from regular classroom instruction.

Cocurricular Activities. Cocurricular activities (experiences) are comprised of the group of school-sponsored activities, under the guidance or supervision of qualified adults, designed to provide opportunities for pupils to participate in such experiences on an individual basis or in small or large groups--at school events, public events, or a combination of these, for purposes such as motivation, enjoyment, and improvement of skills.

Safety and Driver Education. The subject matter and related activities in safety and driver education are organized for carrying on learning experiences concerned with developing the ability to respond appropriately and efficiently (a) in the operation of a motor vehicle and (b) as a pedestrian in traffic.

The following definitions of content areas are based on A Systematic Approach to Evaluating Career Education Materials at Local Levels, Office of Career Education, USOE, November, 1974, O.E.C.-0-74-9025 except for the definition of Career Adaptability Skills which represents the present thinking of the Office of Career Education.

Career Adaptability Skills. The content area of career education that helps an individual change with change. The career adaptability skills include: basic academic skills of reading, writing, and arithmetic; work habits; work values; knowledge of work, work environments, and occupations; career decision making skills; and job seeking, job getting, and job holding skills.

Career Guidance and Counseling. Individual and/or group assistance aimed at helping persons become aware of, explore, make decisions about, prepare for, enter, and/or progress in various types of paid or unpaid work.

Career Information. Printed or nonprinted material describing the characteristics, benefits, required education and training, and lifestyle associated with one or more types of paid or unpaid work.

Community Relations. The use of business, labor, industry, professional, community, government, home, and family persons and/or settings as resources in the planning and/or operation of educational programs.

Cooperative Work Experience. Part-time or full-time observation or active participation in a paid or unpaid work setting for the purpose of becoming aware of, exploring, or preparing for future work opportunities.

Evaluation. The design and implementation of plans for the collection of data to study and improve the operation and effectiveness of educational activities.

Follow-Up. The act of collecting and analyzing information gained from prior participants in an educational activity for the purpose of assisting these persons in their present position and/or improving existing or future educational programs.

Management. The process of supervising the design and operation of planned activities including the processes of problem identification, needs assessment, priority setting, solution generation, activity planning, operational implementation, and evaluation.

Placement. The act of successfully assisting persons to enter paid jobs, further education, or other activities consistent with their previous education and work experience.

Staff Development. The training or retraining of professional and support personnel, as individuals and/or groups, to improve their knowledge and/or skills in career education.

APPENDIX B

DESCRIPTION OF SPECIAL GROUPS

The following definitions of culturally different, gifted and talented, mentally handicapped, and physically handicapped are based on Handbook VI, Standard Terminology for Curriculum and Instruction in Local and State School Systems, U.S. Department of Health, Education, and Welfare, 1970, O.E.-23052. The following definitions of ethnic group, female, incarcerated, and senior citizen are based on The Random House Dictionary of the English Language: The Unabridged Edition. New York: Random House, Inc., 1966. The following definition of problem reader is based on George Kaluger and Clifford J. Kolson. Reading and Learning Disabilities. Columbus, Ohio: Charles E. Merrill Publishing Co., 1969

Culturally Different. Pupils who have deviations or deficiencies in cultural or environmental background that adversely affect their learning ability or general performance in school.

Ethnic Group. A group of people of the same race or nationality who share a common and distinctive culture.

Female. A women or a girl.

Gifted and Talented. Pupils identified by professionally qualified personnel as being mentally gifted or talented in areas such as general academic work, fine arts, vocational and technical areas, athletics, human relationships, etc.

Incarcerated. To be imprisoned.

Mentally Handicapped. Pupils identified by professionally qualified personnel as being mentally retarded, according to degree of retardation. This includes those individuals whose level of mental development is such that they have been identified as unable, without special help, to profit from the usual school program.

Physically Handicapped. Pupils identified by professionally qualified personnel as having one or more physical handicaps; this would include the blind, the hard of hearing, those with speech defects, and the crippled.

Problem Reader. A seriously disabled reader, one who is reading at a level far below his or her capacity and who is experiencing difficulty in progressing under normal learning conditions.

Senior Citizen. An elderly or aged person, especially one over 65 years of age who is retired or living on a pension.

APPENDIX C

DESCRIPTION OF TYPE OF MATERIALS

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The following definitions of type of materials are based on A Systematic Approach to Evaluating Career Education Materials at Local Levels, Office of Career Education, USOE, November, 1974, O.E.C.-0-74-9025.

Administrative Material. Material directed at noninstructional personnel which provides assistance in managing and administering a school program or a phase thereof.

Bibliography or Directory. List of references, resource materials, or resource persons.

Curriculum Guide. Teacher-directed materials, informational in nature, which help the teacher to plan and carry out programs of study.

Evaluation Instrument. Achievement tests, aptitude tests, self-tests, or other materials which help teachers assess their students or their programs are considered evaluation instruments.

Instructional Unit. A guide which is broad in nature and directs instructional personnel to teaching techniques or assists them in developing certain kinds of units. It requires much additional planning by the user.

Instructional Module for Student. Instructional modules are units or parts of units of instruction developed in modular form for student use with or without the supervision of an instructor through each step. They may also be described as a LAP (Learning Activity Package) or a UNIPAC.

Laboratory/Practice Manual. Provides exercises or experiences which give students an opportunity to apply or practice learning in a laboratory situation.

Simulation Situation. A technique in which the instructor reproduces in the classroom, or elsewhere, "real-life" situations.

Student Workbook or Manual. Student-directed materials usually referenced to an item in an accompanying textbook. It can be a supplementary unit which a teacher would use for drill and practice exercises, or it may be a handbook of the "how-to" type or an informational piece for students.

Teacher's Guide. An aid to help teachers use or implement a particular curriculum material; it usually accompanies the material.

Textbook. A "standard" text for the grade and/or subject field involved.

APPENDIX D Sample Index Card

A. _____ Retrieval Number

B. _____ Title or Brief Description of Material

C. _____ Source & Date of Material

D. Educational Level
- _____1. Preschool
- _____2. Early Elementary (K-3)
- _____3. Upper Elementary (4-6)
- _____4. Junior/Middle (7-9)
- _____5. Senior (10-12)
- _____6. Post-Secondary
- _____7. Adult

E. Discipline and Content Area
- _____ 1. Agriculture
- _____ 2. Art
- _____ 3. Business
- _____ 4. Distributive Education
- _____ 5. English Language Arts
- _____ 6. Foreign Languages
- _____ 7. Health Occupations
- _____ 8. Health and Safety in Daily Living, Physical Education and Recreation
- _____ 9. Home Economics
- _____10. Industrial Arts
- _____11. Mathematics
- _____12. Music
- _____13. Natural Science
- _____14. Office Occupations
- _____15. Safety and Drivers Ed.
- _____16. Social Sciences
- _____17. Technical Education
- _____18. Trade & Industrial Occup.
- _____19. Cocurricular Activities
- _____20. Differentialized Curriculum for the Handicapped
- _____21. Gen'l Elem. & Sec. Education
- _____22. Career Adaptability Skills
- _____23. Career Guid. & Counseling
- _____24. Career Information
- _____25. Community Relations
- _____26. Cooperative Work Exp.
- _____27. Evaluation
- _____28. Follow-up
- _____29. Management
- _____30. Placement
- _____31. Staff Development
- _____32. Other _____

F. Career Cluster
- _____ 1. Agri. Bus. & Natural Res.
- _____ 2. Business and Office
- _____ 3. Communications and Media
- _____ 4. Consumer and Homemaking Ed.
- _____ 5. Construction
- _____ 6. Environmental Control
- _____ 7. Fine Arts and Humanities
- _____ 8. Health
- _____ 9. Hospitality and Recreation
- _____10. Manufacturing
- _____11. Marine Science
- _____12. Marketing and Distribution
- _____13. Personal Services
- _____14. Public Services
- _____15. Transportation

G. Career Education Stage
- _____ 1. Career Awareness
- _____ 2. Self Awareness
- _____ 3. Career Exploration
- _____ 4. Career Decision Making
- _____ 5. Career Preparation
- _____ 6. Career Entry
- _____ 7. Career Advancement

H. Special Groups
- _____ 1. Culturally Different
- _____ 2. Ethnic
- _____ 3. Female
- _____ 4. Gifted and Talented
- _____ 5. Incarcerated
- _____ 6. Mentally Handicapped
- _____ 7. Physically Handicapped
- _____ 8. Problem Reader
- _____ 9. Senior Citizen
- _____10. Other _____

I. Type of Material
- _____ 1. Administrative Material
- _____ 2. Bibliography or Directory
- _____ 3. Curriculum Guide
- _____ 4. Evaluation Instrument
- _____ 5. Instructional Unit
- _____ 6. Instructional Module
- _____ 7. Laboratory-Practice Manual
- _____ 8. Simulation Situation
- _____ 9. Student Workbook or Manual
- _____10. Teacher's Guide
- _____11. Textbook
- _____12. Audio Tapes
- _____13. Cassettes
- _____14. Films ___8mm ___16mm
- _____15. Filmstrips
- _____16. Records, Discs
- _____17. Slides
- _____18. Transparencies
- _____19. Video Tapes
- _____20. Activity Kits
- _____21. Games
- _____22. Puzzles
- _____23. Tools and Related Items
- _____24. Other _____